Contents

Part I Thermal Engineering

A Review and New Design Options to Minimize the Capital and Operational Cost of Single Effect Solar Absorption Cooling System for Residential Use .................................................. 3
V. Boopathi Raja and V. Shanmugam

Ant Colony Optimization for the Minimization of Internal Combustion Engine Forces and Displacements .............................. 19
T. Ramachandran, K. P. Padmanaban and J. Vinayagamoorthy

Augmentation of Heat Transfer and Pressure Drop Characteristics Inside a Double Pipe U-Tube Heat Exchanger by using Twisted Tape Inserts ............................... 33
P. V. Durga Prasad and A. V. S. S. K. S. Gupta

Design of Integrated R134a Vapor Compression Heating and Cooling Cycle ................................................................. 47
Priyank Agarwal, R. Shankar and T. Srinivas

Effect of Thermal Barrier Coating on DI Diesel Engine Fuelled with P20 Biodiesel .......................................................... 55
A. R. Pradeep Kumar, K. Annamalai and S. R. Premkartikkumar

Effects of Compression Ratio on the Performance and Emission Characteristics of Diesel Engine Fuelled with Ethanol Blended Diesel Fuel .............................................. 63
M. Santhosh and K. P. Padmanaban

Green Carrier ................................................................. 81
Vikrant Goyal and Pankhuri Arora
Implementation of Ansys for Analyzing Windmill Tower with AISI 302 Stainless Steel ........................................ 93
K. Vinoth Raj, N. Shankar Ganesh and T. Elamaran

Integration of LiBr-H$_2$O Vapor Absorption Refrigeration Cycle and Power Cycle .......................................... 103
R. Shankar and T. Srinivas

Implementation of Methanol as Fuel in SI Engine for the Measurement of Formaldehyde Emission ....................... 111
T. Elamaran, N. Shankar Ganesh and K. Vinoth Raj

Performance Characteristics of Diesel Engine Operating with Preheated Palm Biodiesel .................................. 123
Sumedh Ingle, Vilas Nandedkar and Madhva Nagarhalli

Recent Trends in Development of Hydraulic Press for Damper Flap Notching ................................................. 131
K. Vinoth Raj

Theoretical Analysis of Overall Heat Loss Coefficient in a Flat Plate Solar Collector with an In-Built Energy Storage Using a Phase Change Material ........................................ synergy
R. Sivakumar and V. Sivaramakrishnan

Part II Design and Manufacturing Techniques

Design and Development of Nonautomatic Tabletop Mini Lathe ......... 157
T. T. M. Kannan and P. Marimuthu

Experimental Analysis of the Pressure Distribution on Different Models of Carbody in the Windtunnel ...................... 165
K. Selvakumar and K. M. Parammasivam

Neuro-Genetic Hybrid System for 2D Fixture Layout ..................... 185
M. Vasundara, K. P. Padamanaban, M. Sabareeswaran and K. Kalaivanan

Part III Materials and Machining Processes

Basic Properties and Performance of Vegetable Oil-Based Boric Acid Nanofluids in Machining .......................... 197
P. Vamsi Krishna, R. R. Srikant, R. Padmini and Bharat Parakh
Cuckoo Search Algorithm for Optimization of Sequence in PCB Holes Drilling Process .......................... 207
Wei Chen Esmonde Lim, G. Kanagaraj and S. G. Ponnambalam

Efficient Cooling of Building Using Phase Change Materials Along with Coolant .............................. 217
S. Mathana Krishnan, M. Joseph Stalin and P. Barath

Fatigue Damage Mechanisms in Fiber Reinforced with Al₂O₃ Composites Under Cyclic Reversed Loading ............ 231
K. Mohamed bak and K. Kalaichelvan

Investigation of Chip Morphology and Tool Wear in Precision Turning Process .......................................... 241
R. Vinayagamoorthy and M. Anthony Xavior

Investigation of Micromachining on CNC ........................................ 251
D. Rajkumar, P. Ranjithkumar and C. Sathiyanarayanan

Machining Performance of TiCN/Al₂O₃ Multilayer and B-TiC Nano Multilayer Coated Inserts on Martensitic Stainless Steel in CNC Turning .................................................. 261
Kamaraj Chandrasekaran, P. Marimuthu and K. Raja

Metallurgical Test on 20MnCr5 Steel: To Suggest as a Suitable Crankshaft Material ................................. 273
M. Umashankaran, J. Hari Vignesh, A. Saravana Kumar, R. Shyamaprasad and R. Saravana Prabhu

Multi-Objective Optimization and Empirical Modeling of Centerless Grinding Parameters ......................... 285
N. Senthil Kumar, C. K. Dhinakarraj, B. Deepanraj and G. Sankaranarayanan

Nanomaterials in Gas Sensors: A Big Leap in Technology! ................................................................. 297
G. Paulraj, A. Evangeline and G. Arun Prakash

Statistical Analysis of Tool Wear Using RSM and ANN ............................................................... 305
A. Arun Premnath, T. Alwarsamy and T. Abhinav

Surface Integrity of Ti-6Al-4V Precision Machining Using Coated Carbide Tools Under Dry Cutting Condition ... 317
R. Vinayagamoorthy and M. Anthony Xavior
Surface Roughness Evaluation in Drilling Hybrid
Metal Matrix Composites ........................................ 325
T. Rajmohan, K. Palanikumar and G. Harish

Thermomechanical Behavior of Commercially Pure Titanium
(CP-Ti) During Isothermal Compressive Deformation .......... 333
M. Vetrivel, T. Senthilvelan and G. Sriram

Part IV Intelligent Manufacturing

A Heuristic toward Minimizing Waiting Time of Critical
Jobs in a Flow Shop .................................................. 343
R. Pugazhenthi and M. Anthony Xavior

A Study on Development of Knee Simulator for Testing
Artificial Knee Prosthesis .............................................. 351
R. B. Durairaj, J. Shanker, P. Vinoth Kumar and M. Sivasankar

An Integrated Methodology for Geometric Tolerance
Analysis and Value Specification Based on Arithmetical,
Graphical and Analytical Methods ................................ 361
R. Panneer and V. Sivaramakrishnan

Complexity on Parallel Machine Scheduling: A Review .......... 373
D. K. Behera

Design of Optimal Maintenance Strategy ......................... 383
A. Sarkar and D. K. Behera

Effect of Dummy Machines in the Gupta’s Heuristics
for Permutation Flow Shop Problems ............................. 391
A. Baskar and M. Anthony Xavior

Productivity Improvement in Railway Reservation Process:
A Case Study ........................................................... 399
Krishna Kumar Singh Sengar and Apratul Chandra Shukla

Simulation Study of Servo Control of Pneumatic Positioning
System Using Fuzzy PD Controller ............................... 409
D. Saravanakumar and B. Mohan
Part V  Propulsion Systems

Studies on Starting Thrust Oscillations in Dual-Thrust Solid Propellant Rocket Motors ..................................  421
S. Deepthi, S. K. Kumaresh, D. Aravind Kumar, J. Darshan Kumar and M. Arun

Vibration Analysis of a Constant Speed and Constant Pitch Wind Turbine ............................................  429
T. Sunder Selwyn and R. Kesavan

Part VI  Aircraft Design and Manufacturing

Comparative Study Between Experimental Work and CFD Analysis in a Square Convergent Ribbed Duct .................  447
K. Sivakumar, E. Natarajan and N. Kulasekharan

Optimization of Rounded Spike on Hypersonic Forebody Reattachment ..................................................  459
A. Sureshkumar, S. Nadaraja Pillai and P. Manikandan

Thermo Mechanical Analysis and Design of Rotating Disks .........  473
Priyambada Nayak and Kashi Nath Saha

Part VII  Recent Trends in Civil Engineering

A Study on Radioactivity Levels in Sedimentary and Igneous Rocks Used as Building Materials in and Around Tiruchirappalli District, Tamil Nadu, India ........................ 487
P. Shahul Hameed, G. Sankaran Pillai, G. Satheeshkumar and K. Jeevarenuka

An Experimental Approach on Enhancing the Concrete Strength and its Resisting Property by Using Nano Silica Fly Ash ....................  497
Yuvaraj Shanmuga Sundaram, Dinesh Nagarajan and Suji Mohankumar

Numerical Analysis and Study of Nanomaterials for Repair in Distressed Irrigation Structures ........................ 505
J. Nirmala, G. Dhanalakshmi and A. Rajaraman
Part VIII  Geotechnical Engineering

Russell Projection and Mercator Projection by Harmonic Equations Comparison Study ........................................... 517
Mohammed S. Akresh and Ali E. Said

Stable Isotopic Analysis Using Mass Spectrometry and Laser Based Techniques: A Review ........................................ 523
M. Someshwar Rao

Part IX  Waste Management

An Analytical Study of Physicochemical Characteristics of Groundwater in Agra Region ........................................ 541
Chandel Prerna, Piyus Kumar Pathak, Deepak Singh and Amitabh Kumar Srivastava

Experimental Studies on Decolourisation of Textile Effluent by Using Bioremediation Technique ........................ 551
S. Sathish and D. Joshua Amarnath

Shade Improvement in Textiles Through Use of Water From RO-Treated Dye Effluent ............................................ 561
S. Karthikeyan and R. I. Sathya

Part X  Physics

Fabrication and Electrochemical Properties of All Solid State Lithium Battery Based on PVA–PVP Polymer Blend Electrolyte ................................................................. 571
N. Rajeswari, S. Selvasekarapandian, J. Kawamura and S. R. S. Prabaharan

Modeling Thermal Asymmetries in Honeycomb Double Exposure Solar Still ......................................................... 579
K. Shanmugasundaram and B. Janarthananan

Optical Band Gap Studies on Dy\(^{3+}\) Doped Boro-Tellurite Glasses ................................................................. 595
K. Maheshvaran and K. Marimuthu

Preparation and Characterization of Cobalt Doped Mn-Zn Ferrites ................................................................. 603
M. Bhuvaneswari and S. Sendhilnathan
Resonant Frequency Analysis of Nanowire-Based Sensor and Its Applications Toward Ethanol Sensing .......... 611
D. Parthiban, M. Alagappan and A. Kandaswamy

Spectroscopic Analysis on Sm$^{3+}$ Doped Fluoroborate Glasses ........................................... 619
S. Arunkumar and K. Marimuthu

Synthesis and Spectroscopic Characterization of Pure and l-Arginine Doped KDP Crystals ................. 627
K. Indira and T. Chitravel

Structural and Dielectric Studies on Dy$^{3+}$ Doped Alkaliborate Glasses ........................................... 637
S. Arunkumar and K. Marimuthu

Part XI  Chemistry

Crystal Growth and Characterization of Biologically Essential Drug Materials ........................................... 647
K. Bhavani, K. Sankaranarayanan and S. Jerome Das

Indigo Dye Removal by Using Coconut Shell Adsorbent and Performance Evaluation by Artificial Neural Network .......... 655
S. K. Deshmukh

Structural and Electrical Conductivity of ZnO Nano Bi-pyramids-like Structure ........................................... 665
Subbaiyan Sugapriya, Rangarajalu Sriram and Sriram Lakshmi

Part XII  Mathematics

An Ordering Policy for Deteriorating Items with Quadratic Demand, Permissible Delay, and Partial Backlogging ........ 673
K. F. Mary Latha and R. Uthayakumar

Complex Dynamics of BRD Sets ........................................... 683
Bhagwati Prasad and Kuldip Katiyar

Coordinating Supply Chain Inventories with Shortages ................. 689
R. Uthayakumar and M. Rameswari
Corrosion Inhibition of Mild Steel in Hydrochloric Acid Medium by 1-Methyl-3-Ethyl-2, 6-Diphenyl Piperidin-4-One Oxime .......................................................... 697
K. Tharini, K. Raja and A. N. Senthilkumar

New Mutation Embedded Generalized Binary PSO ...................... 705
Yograj Singh and Pinkey Chauhan

On Fuzzy Fractal Transforms .................................................. 717
R. Uthayakumar and M. Rajkumar

Part XIII Management Studies

An Application of Graph Theory Towards Portfolio Judgement ........ 729
Tuhin Mukherjee and Arnab Kumar Ghoshal

A Study on CRM Influence in Small and Medium Retail B2B Industries in India ......................................................... 737
T. Narayana Reddy and G. Silpa

A Study on the Effectiveness of Campus Recruitment and Selection Process in IT Industries ............................... 745
Geeta Kesavaraj and Manjula Pattnaik

Financial Transactions Over Wired and Wireless Networks: Technical Perspective ..................................................... 759
J. Gnana Jayanthi, J. Felicita, S. Albert Rabara, A. Arun Gnanaraj and P. Manimozhi

Job Satisfaction as Predictor of Organizational Commitment ........ 767
P. Na. Kanchana

Knowledge Management Key to Competitive Advantage ............ 775
V. Maria Tresita Paul and G. Prithiviraj

Part XIV Digital Libraries: Information Management for Global Access

Knowledge Management and Academic Libraries ..................... 785
K. Mahalakshmi and S. Ally Sornam

Author Index ........................................................................... 791
Emerging Trends in Science, Engineering and Technology
Proceedings of International Conference, INCOSET 2012
Sathiyamoorthy, S.; Caroline, B.E.; Jayanthi, J.G. (Eds.)
2012, XXVIII, 796 p., Hardcover
ISBN: 978-81-322-1006-1